REMARKS

In accordance with the foregoing, claims 8-14 have been added, and claims 1-3 and 5-14 are pending and under consideration. No new matter is presented in this Amendment.

REJECTIONS UNDER 35 U.S.C. §103:

In the Office Action on pages 2-4, the Examiner rejects claims 1-3 and 6-7 under 35 U.S.C. §103(a) as being unpatentable over Nomura et al, "Super-resolution read only memory disk with metal nanoparticles or small aperture," Japanese Journal of Applied Physics Part 1, Volume 41 (3B), March 2002 (pp. 1876-1879), (hereafter Nomura I) in view of Nomura et al (Japanese Patent 2002-133720) (hereafter Nomura II). The Applicant respectfully traverses this rejection and requests reconsideration of the claims for at least the following reasons.

As noted by MPEP 2143.01 and 2143.03, to support a prima facia case of obviousness, the Examiner has an initial burden to provide both the existence of individual elements corresponding to the recited limitations, and a motivation to combine the individual elements in order to create the recited invention. Both the individual elements and the motivation need to be shown to have existed in the prior art in order to prevent the trap of impermissible hindsight.

In support of this rejection, the Examiner holds that it would have been obvious to modify the media anticipated or rendered obvious by Nomura I by using other dielectric materials and/or metal particles such as the Au (gold) disclosed by Nomura II in place of the SiO_2-Ag near field enhancing layer of Nomura I with a reasonable expectation of forming a useful optical recording medium having similar performance to that of the example of substrate/silicon/ZnS-$Si0_2$/GR.

However, as stated by the Examiner on page 3 of the Office Action, Nomura I does not disclose a high-density readable only optical disk, comprising: a substrate with pits; and at least one mask layer with a super resolution near field structure, the at least one mask layer comprising a mixture of a dielectric material and metal particles wherein the metal particles are derived from gold, platinum, rhodium, palladium, or a mixture thereof. By way of review, Nomura I discloses a polycarbonate substrate with a pit depth of 50 nm having a reflective layer, a granular film of a mixture of ultrafine particles embedded in an insulating matrix, a dielectric layer, and a UV resin layered thereon (sections 2.1, 2.3 and Fig. 5). The granular film is Ag nanoparticles in a SiO_2 matrix.

In addition, Nomura II does not disclose a readable only optical disk, comprising: a

substrate with pits and at least one mask layer with a super resolution near field structure, the at least one mask layer comprising a mixture of a dielectric material and metal particles wherein the metal particles are derived from gold, platinum, rhodium, palladium, or a mixture thereof. Rather, Nomura II discloses a rewritable optical recording medium (para. [0001] and [0007]) comprising a recording layer of amorphous record marks (e.g., para. [0006], [0007] and [0010]). Referring to paragraphs [0006] through [0013] and Figures 1 and 2, Nomura II discloses a substrate having a mask layer 14, a first dielectric film 4, a record film 6, a second dielectric film 8, a reflective film 10, and a protective coat 12 layered thereon. Only the reflective film is disclosed as comprising metal particles in a dielectric, "said reflective film is an optical recording medium characterized by consisting of film which comes to distribute a metal particle in a dielectric" (para. [0006]). In contrast, the mask layer 14 "consists of organic coloring matter from which light transmittance changes the temperature" (para. [0013]). That is, as the temperature of the mask layer 14 rises due to light irradiated to the mask layer 14, the mask layer 14 transmits more of the light (para. [0009]).

As stated above, Nomura I does not provide all of the individual elements of the recited limitations of claim 1. Further, because Nomura II does not cure the defects of Nomura I, it is noted that this rejection is believed to be traversed. Thus the suggested combination does not disclose each and every element of the claim 1.

Claims 2-3 and 5-7 are deemed patentable due at least to their depending from claim 1.

Arguing in the alternative, assuming that the Examiner provided the individual elements of the recited limitations, the Examiner has failed to provide a motivation to combine the individual elements from the prior art. Here, Nomura I discloses a read only memory (ROM) disk medium (referring to, for example, Title, Abstract, and sections 1, 2.3, 3 and 4). Nomura I discloses reading pits on a read only disk (section 2.3). Nomura I does not disclose reading amorphous marks on a rewritable optical recording medium. In contrast Nomura II discloses a rewritable optical recording medium (para. [0001] and [0007]) (RW disk). The RW disk of Nomura II records data by melting the crystalline record film such that on rapid solidification the record film that was melted solidifies as an amorphous structure (para. [0006] and [0009]). This crystal-amorphous change (phase change) is disclosed as reversible (para. [0009]) to allow erasure of data and re-recording data. Nomura II discloses using the reflective film 10 to record and read amorphous marks. There is no disclosure of reading pits in Nomura II. Since Nomura I and Nomura II were contemporaneously written by the same authors, the fact that the authors

deliberately omitted mentioning the method of reading amorphous marks on RW disks in Nomura I and omitted mentioning reading pits on ROM disks in Nomura II, is evidence that it was not obvious to one of skill in the art at the time of invention of the instant claimed subject matter to combine Nomura I and Nomura II to read pits in a ROM disk. As such, it is respectfully submitted that there is insufficient evidence to maintain the obviousness rejection, and it is respectfully requested that the rejection be reconsidered and withdrawn.

However, in order to efficiently progress prosecution of the present application, the Applicant has followed the Examiner's suggestion on page 4 of the Office Action and added claims 8-12, to recite, among other things, metal particles are derived from one of rhodium and a mixture of rhodium and gold, platinum, and palladium. It is believed that these claims will not require a new search, and are thus appropriate under 37 CFR 1.116.

Nomura II states that the metal particle 10B distributed in the dielectric 10A, must be chosen such that the particles and the dielectric do not react to deteriorate the characteristics of the reflecting layer 10 (para. [0010]). Since silver particles react with sulfur, Nomura II teaches using a SiO_2 layer containing the metal particles laminated to the ZnS-SiO_2 reflecting layer 10 (para. [0012]). Nomura I also requires the additional dielectric layer subtrate/silicon/ZnS-SiO_2/GR structure, where the GR film is silver ultrafine particles in SiO_2 insulating matrix, (section 2.1, 3) when using the sulfur containing dielectric. However, claim 13 has been added to more clearly recite the aspect of the present invention where a ZnS-SiO_2 target and Pt target were co-deposited on the substrate by sputtering to form a mixed thin film. Similarly, as Nomura I only discloses SiO_2 as the dielectric embedded with silver particles, new claim 14 has been added to capture the limitations of original claim 1 and dependent claim 2.

Further, assuming the Examiner's statement of the carrier-to-noise ratio (CNR) advantage is correct, that the effect will be dependent upon the density and size of the metal particles, the density and size of Ag is different from Au, Pt, Pd, Rh, and may well be the explanation for the CNR advantage of the claimed high-density readable only optical disk. For example, the atomic radius and density of silver is 160 pm and 10.49 gm/cm^3, where Pt is 135 pm and 21.45 gm/cm^3. Regardless of the reason for the advantage, the advantage is further evidence of the nonobviousness of the claimed invention.

Based on the foregoing, this rejection is respectfully requested to be withdrawn.

The Examiner rejects claims 1-3 and 5-7 under 35 U.S.C. §103(a) as being unpatentable over Nomura et al, "Super-resolution read only memory disk with metal nanoparticles or small

aperture," Japanese Journal of Applied Physics Part 1, Volume 41 (3B), March 2002 (pp. 1876-1879) (Nomura I), in view of Nomura et al (Japanese Patent 2002-133720) (Nomura II), further in view of either of Ashida et al (Japanese Patent 11-213447) (hereafter, Ashida), Yuzusu et al (Japanese Patent 10-106027) (hereafter, Yuzusu) or Naruse et al (Japanese Patent 06-295471) (hereafter, Naruse). This rejection is respectfully traversed for at least the following reasons.

As Ashida, Yuzusu, and Naruse are all directed toward a rewritable disk using a phase change record mark, these references do not suggest application to a readable only optical disk, comprising: a substrate with pits; and at least one mask layer with a super resolution near field structure. That is, they do not provide the elements of the claimed features deficient in Nomura I and Nomura II. In addition, there is no suggestion in the cited references to provide the motivation to combine Nomura I and Nomura II.

The Examiner states that Ashida teaches Al, Ag, Au, or Cu dispersed in various dielectrics including silica, magnesium fluoride, calcium fluoride, zirconia, ZnS or titania [0027]. However, Ashida discloses a phase change optical recording medium (para. [0001]). As a matter of review, with the phase change optical recording medium, the write laser beam heats the phase change film above its melting point and the melted portion of the phase change film thus heated is cooled before it can recrystallize leading to an amorphous mark. The difference in reflectivity of the read laser beam on the amorphous mark and the crystallized portion of the phase change film creates the signal. To erase the data, the amorphous portion is heated and allowed to cool slowly enough that it can recrystallize, resulting in, ideally, no difference in the recrystallized reflectivity and the crystalline reflectivity under the read laser. The problems addressed by Ashida involve unwanted erasure of neighboring data points due to dispersion of heat during the melting and recrystallization as well as various amounts of heat required depending on whether writing takes place on a previously written portion or a virgin portion of the phase change film (para. [0011] and [0012]). In other words, the disclosure of Ashida addresses improving a reflection factor based on phase change of the phase change film. Ashida does not mention nor suggest a ROM disk with pits.

The Examiner also states Yuzusu teaches Fe, Co, Cr, Ti, Cu, Pt, Pd, Ni, V, Mo, W,Te Ag, Au, or Cu dispersed in various dielectrics including oxides, sulfides, carbides and nitrides and mixtures thereof [0017]. However, Yuzusu similarly discloses recording and reading on a phase change optical recording medium (para. [0001]). Although Yuzusu mentions the super resolution technique applied to the ROM medium (para. [0004]), Yazusu does not describe the

technique further. Rather, Yazusu discloses a seed layer in the phase change optical recording medium adjacent to a phase change optical recording layer. The seed layer consists of metal particles in a dielectric. The seed layer controls the crystal size in the phase change optical layer when the record mark is erased by melting the amorphous phase and recrystallizing (para. [0015]) otherwise the recrystallized grains disturb the homogeneity of the phase change optical recording layer. As such controllability of thermal conduction and optical transmission is desired. The optical transmission is required to enhance the contrast between the crystalline and amorphous phases of the phase change layer (para. [0016]). A metal or alloy and a dielectric matrix of a comparatively high melting point is desired. By adjusting the amount of metal particles and dielectric, the proper thermal and optical properties can be obtained (para. [0017]). In this way Yazusu discloses a method of eliminating noise from repeated writing and erasing, i.e., melting and solidification as amorphous or crystalline state (para. [0009] and [0006]). The method and the materials disclosed by Yazusu does not suggest improving a method of reading a substrate with pits. Furthermore, there is no suggestion to combine materials selected for their thermal and crystal seed properties with the ROM disk of Nomura I.

The Examiner further states Naruse teaches Ni, Pt, Ni, Cr, Co, Al, Ag, Au, or Cu dispersed in various dielectrics including silica, magnesium fluoride, calcium fluoride, zirconia, ZnS or titania [0020]. However, Naruse also discloses a phase change optical record playback disk (para. [0010]). The layer of metal particles dispersed in the dielectric is carefully composed to achieve thermal properties and light reflecting properties to heat the phase change record layer to cause melting and solidification as either amorphous phase (write) or crystalline phase (erase) (e.g., para. [0042], [0050], and [0052]). Naruse does not disclose or suggest combining the metal dispersed in the dielectric of the optical recording medium with a read only substrate having pits (para. [0054]). Thus, there is no suggestion to combine materials selected for their effect on phase change with the ROM disk of Nomura I.

Because the suggested combination does not disclose each and every element of the claim 1 and there is no suggestion to make the combination selected by the Examiner, the rejection is respectfully believed to be traversed. Claims 2-3 and 5-7 are deemed patentable due at least to their depending from claim 1.

Based on the foregoing, this rejection is respectfully requested to be withdrawn.

DOUBLE PATENTING:

The Examiner has rejected claims 1-3 and 5-7 on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-32 of U.S. Patent 7,087,284 (formerly 10/944,421 (U.S. 2005/0079313)). Since claims 1-3 and 5-7 of the instant application have not yet been indicated as allowable, it is believed that any submission of a Terminal Disclaimer or arguments as to the non-obvious nature of the claims would be premature. MPEP 804(I)(B). As such, it is respectfully requested that the applicant be allowed to address any obviousness-type double patenting issues remaining once the rejection of the claims under 35 U.S.C. §103 is resolved and that the rejection be reconsidered in light of the claims presented above.

CONCLUSION:

There being no further outstanding objections or rejections, it is submitted that the application is in condition for allowance. An early action to that effect is courteously solicited.

Finally, if there are any formal matters remaining after this response, the Examiner is requested to telephone the undersigned to attend to these matters.

If there are any additional fees associated with filing of this Amendment, please charge the same to our Deposit Account No. 503333.

Respectfully submitted,

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